WHAT IS CLAIMED IS:

1. A composite vibration device comprising:

a vibrating member defining a vibration producing source, the vibrating member being comprised of a material having a first acoustical impedance Z_1;

first and second reflecting layers connected to respective sides of the vibrating member, each of the first and second reflecting layers being comprised of a material having a second acoustical impedance Z_2 which is lower than the first acoustical impedance Z_1; and

first and second supporting members, each of which is comprised of a material having a third acoustical impedance Z_3 which is higher than the second acoustical impedance Z_2, the first and second supporting members being connected to sides of the first and second reflecting layers opposing the sides of the reflecting layers connected to the vibrating member, respectively;

wherein vibrations propagated from the vibrating member to the reflecting layers are reflected at the interfaces between the reflecting layers and the supporting members.

2. The composite vibration device according to Claim 1, wherein the ratio Z_2/Z_1 of the second acoustical impedance Z_2 with respect to the first acoustical impedance Z_1 is about

0.2 or less.

3. The composite vibration device according to Claim 1, wherein the ratio Z_2/Z_3 of the second acoustical impedance Z_2 with respect to the third acoustical impedance Z_3 is about 0.2 or less.

4. The composite vibration device according Claim 1, wherein the vibrating member is an electromechanical coupling conversion element.

5. The composite vibration device according to Claim 4, wherein the electromechanical coupling conversion element is a piezoelectric element.

6. The composite vibration device according to Claim 4, wherein the electromechanical coupling conversion element is an electrostrictive element.

7. The composite vibration device according to Claim 1, further comprising a third reflecting layer, a second vibrating member, a fourth reflecting layer, and a third supporting member, which are connected, in this order, to a side of at least one of the first and second supporting members opposing the side thereof connected to at least one

of the first and second reflecting layers.

8. The composite vibration device according to Claim 1, wherein the reflecting layers are defined by a stack of a plurality of layers comprised of materials having different acoustical impedances.

9. The composite vibration device according to Claim 1, wherein when the wavelength of the vibrations produced by only one vibrating member is represented by the symbol λ, the distances from the interfaces between the reflecting layers and the vibrating member to the interfaces between the reflecting layers and the supporting members are in a range of $n \cdot \lambda/4 \pm \lambda/8$, in which the symbol n represents an odd number.

10. The composite vibration device according to Claim 1, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A, B, and C are substantially parallel to each other.

11. The composite vibration device according to Claim 1, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A and B are substantially parallel and the directions B and C are substantially perpendicular to each other.

12. The composite vibration device according to Claim 1, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A and B are substantially perpendicular and the directions B and C are substantially parallel.

13. The composite vibration device according to Claim 1, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the

directions A and B are substantially parallel and also the directions B and C are substantially parallel.

14. A composite vibration device comprising:

first and second vibrating members defining vibrating producing sources, each of the vibrating members being comprised of a material having a first acoustical impedance Z_1;

first, second and third reflecting layers, each of which is comprised of a material having a second acoustical impedance Z_2 which is lower than the first acoustical impedance Z_1; and

first and second supporting members, each of which is comprised of a material having a third acoustical impedance Z_3 which is higher than the second acoustical impedance Z_2;

wherein the first supporting member, the first reflecting layer, the first vibrating member, the second reflecting layer, the second vibrating member, the third reflecting layer, and the second supporting member are connected in this order, and vibrations produced by the first and second vibrating members are reflected at the interface between the first reflecting layer and the first supporting member, or at the interface between the third reflecting layer and the second supporting member, and at the interfaces between the second reflecting layer and the

first or second vibrating member.

15. The composite vibration device according to Claim 14, wherein the reflecting layers are defined by a stack of a plurality of layers comprised of materials having different acoustical impedances.

16. The composite vibration device according to Claim 14, wherein when the wavelength of the vibrations produced by only one vibrating member is represented by the symbol λ, the distances from the interfaces between the reflecting layers and the vibrating member to the interfaces between the reflecting layers and the supporting members are in a range of $n \cdot \lambda/4 \pm \lambda/8$, in which the symbol n represents an odd number.

17. A composite vibration device comprising:

a vibrating member defining a vibration producing source, the vibrating member being comprised of a material having a first acoustical impedance Z_1;

first and second reflecting layers connected to respective sides of the vibrating member, each of the layers being comprised of a material having a second acoustical impedance Z_2 which is lower than the first acoustical impedance Z_1; and

first and second supporting members, each of which is comprised of a material having a third acoustical impedance Z_3 which is higher than the second acoustical impedance Z_2, the supporting members being connected to sides of the reflecting layers opposing the sides thereof connected to the vibrating member;

wherein when the symbol S_1 represents the area of a surface of the vibrating member connected to each of the first and second reflecting layers and the symbol S_2 represents the area of a surface of each of the first and second reflecting layers connected to the vibrating member, the area ratio S_2/S_1 is about 1 or less, and vibrations propagated from the vibrating member to each reflecting layer are reflected at the interfaces between the reflecting layers and the supporting members.

18. The composite vibration device according to Claim 17, wherein the ratio Z_2/Z_1 of the second acoustical impedance Z_2 with respect to the first acoustical impedance Z_1 is about 0.2 or less.

19. The composite vibration device according to Claim 17, wherein the ratio Z_2/Z_3 of the second acoustical impedance Z_2 with respect to the third acoustical impedance Z_3 is about 0.2 or less.

20. The composite vibration device according to Claim 17, wherein the vibrating member is an electromechanical coupling conversion element.

21. The composite vibration device according to Claim 20, wherein the electromechanical coupling conversion element is a piezoelectric element.

22. The composite vibration device according to Claim 20, wherein the electromechanical coupling conversion element is an electrostrictive element.

23. The composite vibration device according to Claim 17, further comprising a third reflecting layer, a second vibrating member, a fourth reflecting layer, and a third supporting member, which are connected, in this order, to a side of at least one of the first and second supporting members opposing the side thereof connected to at least one of the first and second reflecting layers.

24. The composite vibration device according to Claim 17, wherein the reflecting layers are defined by a stack of a plurality of layers comprised of materials having different acoustical impedances.

25. The composite vibration device according to Claim 17, wherein when the wavelength of the vibrations produced by only one vibrating member is represented by λ, the distances from the interfaces between the reflecting layers and the vibrating member to the interfaces between the reflecting layers and the supporting members are in a range of $n \cdot \lambda/4 \pm \lambda/8$, in which the symbol n represents an odd number.

26. The composite vibration device according to Claim 17, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A, B, and C are substantially parallel.

27. The composite vibration device according to Claim 17, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A and B are substantially parallel and the

directions B and C are substantially parallel.

28. The composite vibration device according to Claim 17, wherein when a symbol A represents a direction of vibration displacement of the vibrating member, a symbol B represents a direction of vibrations propagating through the vibrating member, and a symbol C represents a direction of vibrations propagating through each reflecting layer, the directions A and B are substantially parallel and the directions B and C are substantially parallel.

29. The composite vibration device according to Claim 17, wherein when the symbol A represents the direction of vibration displacement of the vibrating member, the symbol B represents the direction of vibrations propagating through the vibrating member, and the symbol C represents the direction of vibrations propagating through each reflecting layer, the directions A and B are substantially perpendicular and also the directions B and C are substantially perpendicular.

30. A composite vibration device comprising:

first and second vibrating members defining vibrating producing sources, each of the vibrating members being comprised of a material having a first acoustical impedance

Z_1;

first, second and third reflecting layers, each of which is comprised of a material having a second acoustical impedance Z_2 which is lower than the first acoustical impedance Z_1; and

first and second supporting members, each of which is comprised of a material having a third acoustical impedance Z_3 which is higher than the second acoustical impedance Z_2;

wherein the first supporting member, the first reflecting layer, the first vibrating member, the second reflecting layer, the second vibrating member, the third reflecting layer, and the second supporting member are connected in this order, and when the symbol S_1 represents the area of a surface of the vibrating member connected to each reflecting layer and the symbol S_2 represents the area of a surface of each reflecting layer connected to the vibrating member, the area ratio S_2/S_1 is about 1 or less; and

vibrations produced by the first and second vibrating members are reflected at the interface between the first reflecting layer and the first supporting member, or at the interface between the third reflecting layer and the second supporting member, and at the interfaces between the second reflecting layer and the first or second vibrating member.

31. The composite vibration device according to Claim 30, wherein the reflecting layers are defined by a stack of a plurality of layers comprised of materials having different acoustical impedances.

32. The composite vibration device according to Claim 30, wherein when the wavelength of the vibrations produced by only one vibrating member is represented by λ, the distances from the interfaces between the reflecting layers and the vibrating member to the interfaces between the reflecting layers and the supporting members are in a range of $n \cdot \lambda/4 \pm \lambda/8$, in which the symbol n represents an odd number.

33. A composite vibration device comprising:

a vibrating member defining a vibration producing source, the vibrating member being comprised of a material having a first acoustical impedance Z_1;

a reflecting layer connected to a side of the vibrating member, the reflecting layer being comprised of a material having a second acoustical impedance Z_2 which is lower than the first acoustical impedance Z_1; and

a supporting member comprised of a material having a third acoustical impedance Z_3 which is higher than the second acoustical impedance Z_2, the support member being

connected to the side of the reflecting layer opposing the side of the reflecting layer connected to the vibrating member;

wherein the vibration propagated from the vibrating member to the reflecting layer is reflected at the interface between the reflecting layer and the supporting member.

34. The composite vibration device according to claim 33, wherein the ratio Z_2/Z_1 of the second acoustical impedance Z_2 with respect to the first acoustical impedance Z_1 is about 0.2 or less.

35. The composite vibration device according to claim 33, wherein the ratio Z_2/Z_3 of the second acoustical impedance Z_2 with respect to the third acoustical impedance Z_3 is about 0.2 or less.

36. The composite vibration device according to claim 33, wherein the vibrating member is an electromechanical coupling conversion element.

37. The composite vibration device according to claim 33, wherein the reflecting layer is defined by a plurality of stacked layers comprised of materials having different acoustical impedances.

38. The composite vibration device according to claim 33, wherein when the symbol S_1 represents the area of a surface of the vibrating member connected to the reflecting layer and the symbol S_2 represents the area of a surface of the reflecting layer connected to the vibrating member, the area ratio S_2/S_1 is about 1 or less.